The Tiling Revolution

By: Dale C. Maley

June 2, 2026

The Tiling Revolution

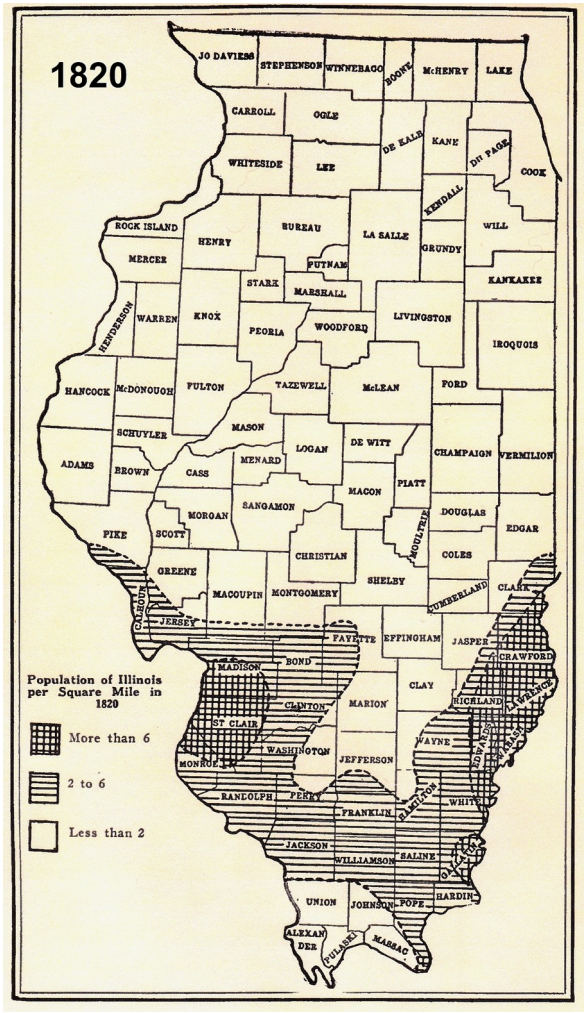
From Hills to Flat Lands:

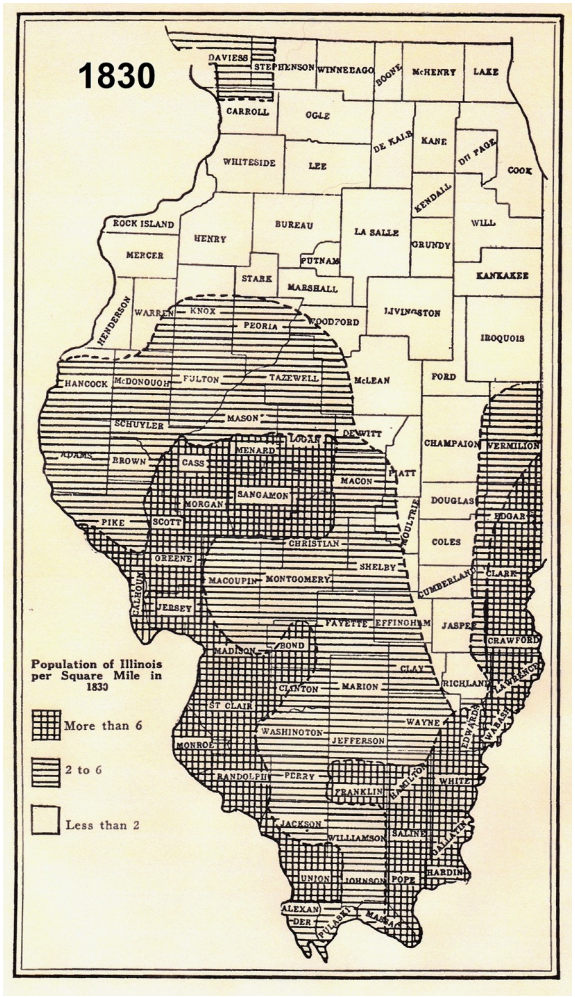
•Before last glacier 10,000 years ago, land was rolling and water flowed off the land due to gravity

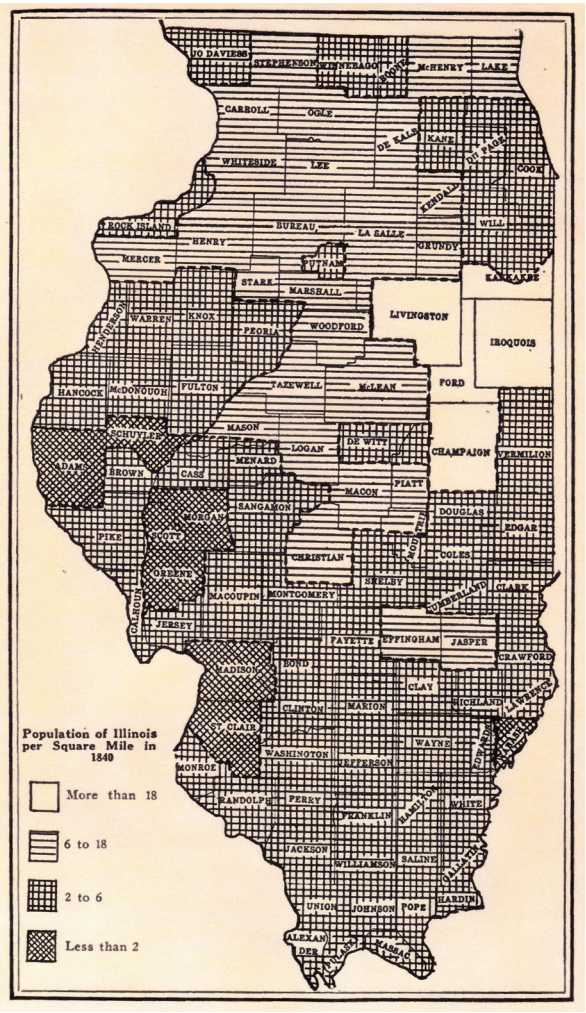
•Last glacier flattened Livingston county

•Good news => flat land better for farming

-Bad news => land became marshy and swampy







1820 1830 1840

The Tiling Revolution of Livingston County, Illinois

Formation of Livingston County

Central Illinois Last Part of Illinois to be settled

- **Swamp**
  - Very few field tiles until 1880s

- **No railroads**
  - No way for farmers to get inputs and sell farm outputs
  - Had to take grain to Ottawa to get milled into flour
  - Had to drive their cattle 100 miles to Chicago to sell

- **Native Americans (Kickapoo) still living in the area**
  - Forced to leave Illinois after 1832 Black Hawk War

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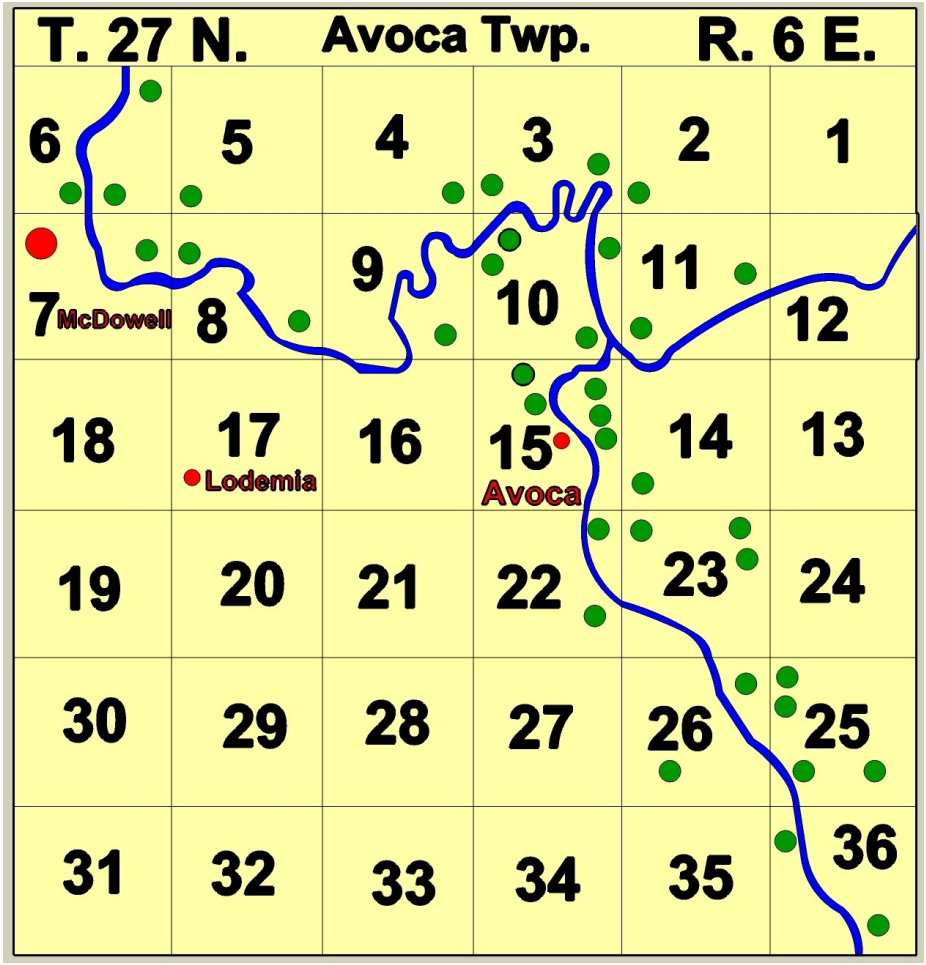
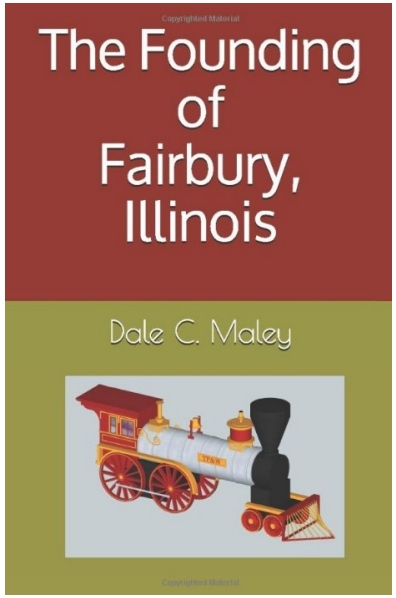


- In the 1830s, everyone just knew, "You have to settle near timber and water."

- All of the early settlers in Avoca Township chose to set up their farm near the Vermilion River or a tributary !



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Challenges for 1830 to 1870 Pioneer Farmers:

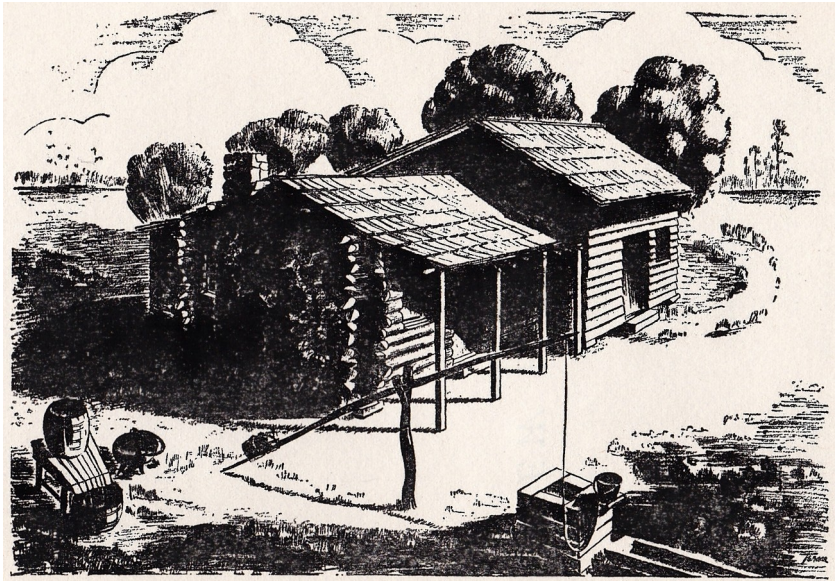
- Land was swampy
- Rains would cause swamps to expand and flood out the crops and homes
- Standing water in low lying areas had Mosquitoes which led to Malaria
  - Common names for Malaria
    - Ague
    - Chills & Fever
    - Bilious Fever

Many families were sick every Fall

The Tiling Revolution

Francis Townsend Story:

- Very few eyewitness accounts of growing up in Livingston County before tiling
- Francis Townsend (1867-1960)
- Father of the Social Security System
- Grew up in Fairbury from 1867-1885



Francis Townsend family log cabin northeast of Fairbury on Indian Creek from his autobiography.

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- "My earliest recollection is of being carried by my mother during one of our farm's periodical floods down a sort of peninsula of dry ground toward the stable where our horses were kept.

- I remember mother standing me on the roof of a pig-shed from which point I could watch my father wade hip-deep into the water that had invaded the barnyard during the night, as he untied the horses and drove them to high ground."

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- "The incident, I grew to learn, was typical of our farm. Father had homesteaded in this north-central Illinois prairie land and the marshes and swamps were a part of it.

- Before we left that part of the country, when I was 18, father's farsightedness and hard work had tile-drained the land until it was clear of such marshes.

- But through the years of my childhood and youth I was constantly shaken in the summer with swamp malaria.

- We called it "ager" or "chills and fever."

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“I believe this was one of the things that kept me from developing as an athletic boy.

I have never been heavy and now, at 76, am described as lean, large-boned and gaunt.”

In his autobiography, he says that malaria caused him to have health issues the rest of his adult life.

Repeated childhood malaria often caused long-term health problems for many people.

The Tiling Revolution

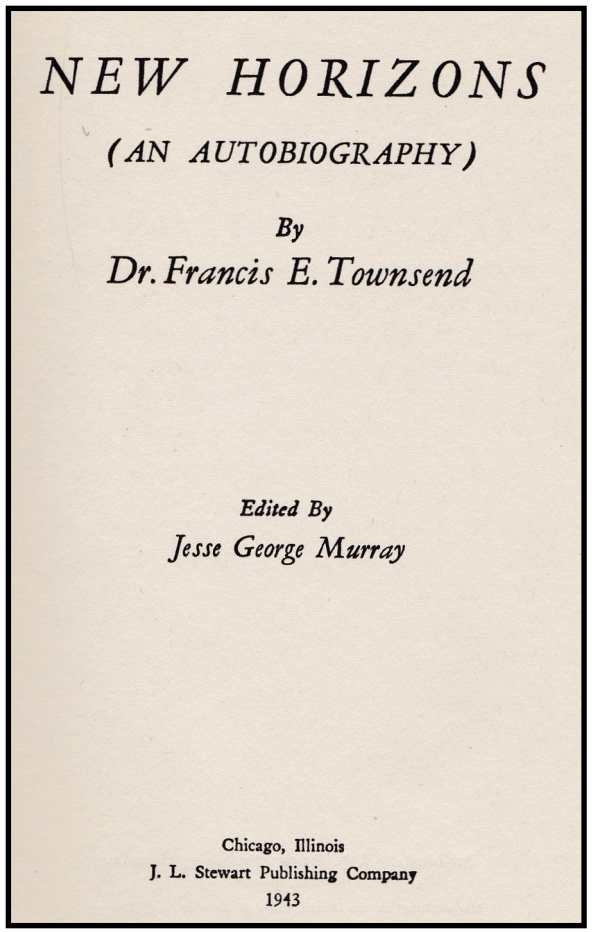
“Fortunately, the type of malaria we had in our community was seldom fatal.

Had it been, Illinois could never have produced a Chicago just 115 miles northeast of Fairbury.

The warm prairie sun did much to alleviate “the shakes” and I can still remember how good it felt to my chill-wracked body when mother carried me out to the sunny side of the house as a child.

She would place me where she could keep an eye on me while she worked at her cheese-making or at the lye kettle, making soap for the family.”

The Tiling Revolution


NEW HORIZONS

(AN AUTOBIOGRAPHY)

By

Dr. Francis E. Townsend

Edited By

Jesse George Murray

Chicago, Illinois

J. L. Stewart Publishing Company

1943

- Francis Townsend grew up with swampland and contracted Malaria
- By the time he was a teenager, his father tiled his farm.
- So Francis saw and wrote about life Before and After field tile was introduced in the Fairbury area.

Published in 1943

The Tiling Revolution

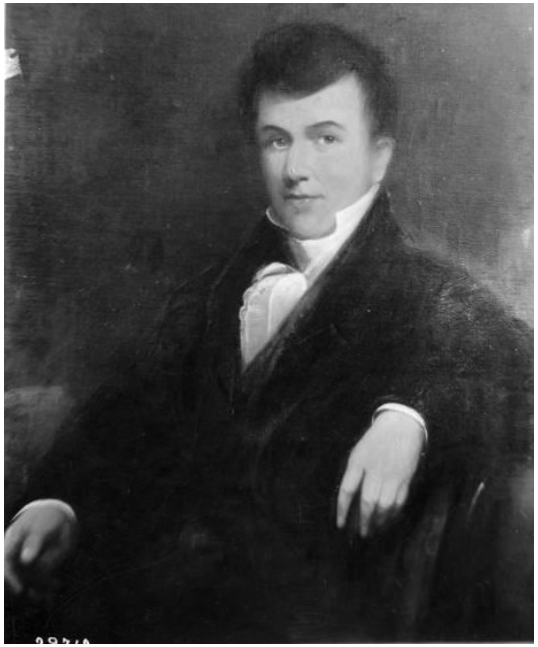
Field Tile Did Not Start in America

- Farmers in **England and Scotland** began draining wet land centuries ago
- Early drains used **stone, brush, and clay pipes**
- By the **1700s**, clay drainage tile was common in Europe
- European immigrants brought this knowledge to America

The Tiling Revolution

America's First Successful Tile Drainage Farmer

- Settled near **Tiffin, Ohio** in the 1820s
- His farm was wet and swampy
- Began installing clay tile drains around **1835**
- Successfully drained his land and increased crop yields
- Other farmers copied his methods
- Tiling spread west to Indiana, then Illinois



John Johnston

The Tiling Revolution

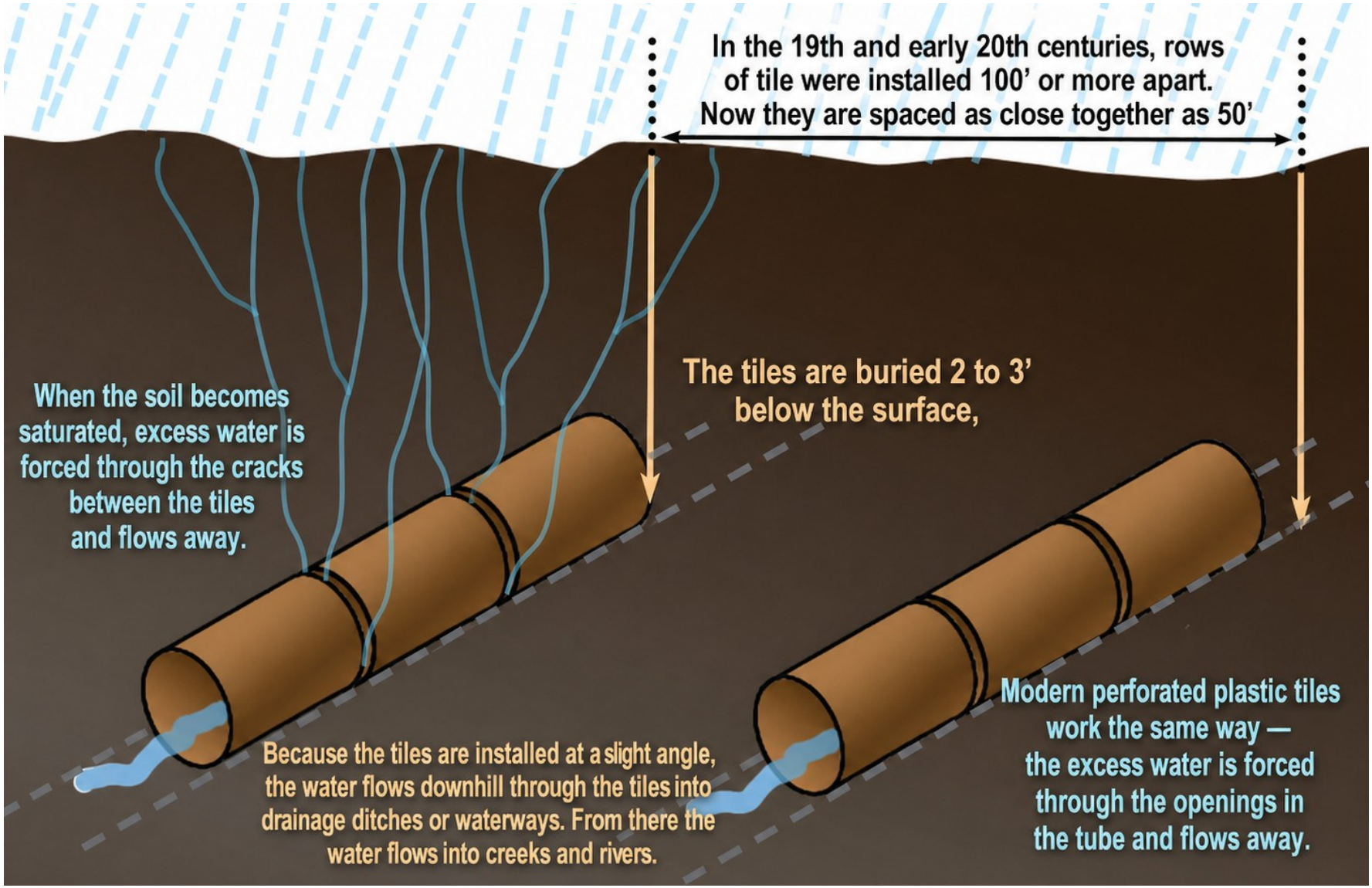
What Do You need to make Clay Tile?

- **Clay (often available in Central Illinois)**
- **Machine to extrude clay into hollow tube for field tile**
- **Wood or coal to fire it in Kilns**
  - Coal discovered in Fairbury in 1862 by John Marsh
  - Other Central Illinois cities dug coal mines after Marsh proved it was available and feasible to mine
  - Fairbury had 5 foot thick coal seam 180 to 200 feet below ground

The Tiling Revolution

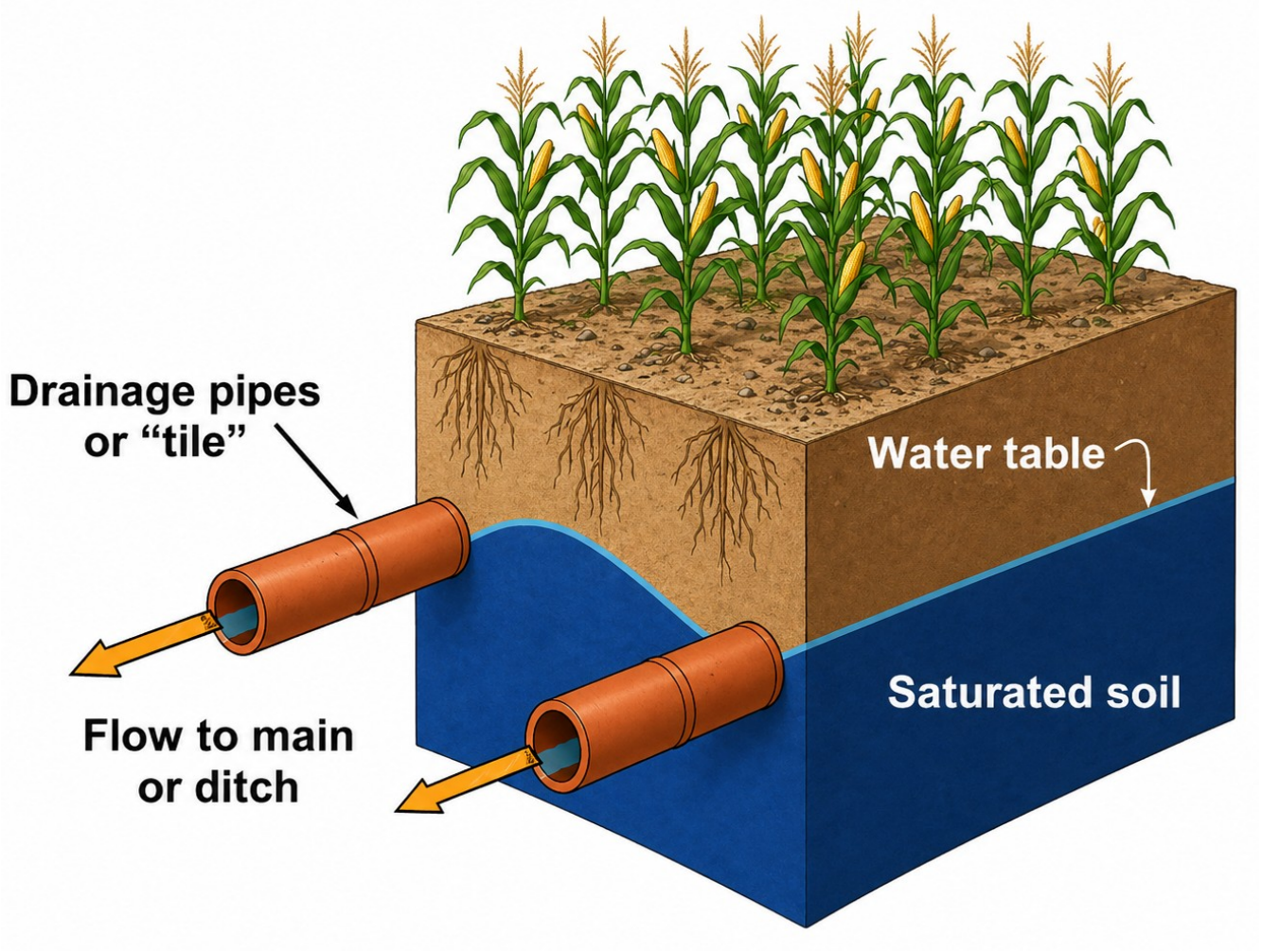
1878 Livingston County History Book by Le Baron

- Unfortunately, does not describe 1st clay tile factory in Livingston County
- Does have a four page treatise on “Drainage” by H. W. S. Cleveland, Esq., landscape gardener, Chicago.
- Only business listing for a tile factory is R. C. Straight, Proprietor of the Fairbury Drain Tile Manufactory.


In the 19th and early 20th centuries, rows of tile were installed 100' or more apart. Now they are spaced as close together as 50'
The tiles are buried 2 to 3' below the surface,
When the soil becomes saturated, excess water is forced through the cracks between the tiles and flows away.
Because the tiles are installed at a slight angle, the water flows downhill through the tiles into drainage ditches or waterways. From there the water flows into creeks and rivers.
Modern perforated plastic tiles work the same way — the excess water is forced through the openings in the tube and flows away.

The Tiling Revolution of Livingston County, Illinois

The Tiling Revolution



- If the water table rises too high, corn roots are killed and yields go down
- Tile keeps the water table below the roots.

The Tiling Revolution

- Manually digging trenches for clay tiles in 1880s was back-breaking work !!

The Tiling Revolution

1879 Illinois Drainage District Act

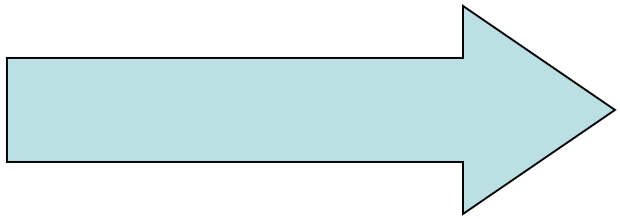
- Passed by the Illinois Legislature in **1879**
  - Allowed landowners to **form organized drainage districts**
  - Districts could **cross property lines** to build drainage systems
  - County court approved the district and supervised the project
  - Districts could **borrow money and issue bonds**
  - Costs were paid by **assessments on benefited landowners**
  - Made large-scale tile drainage practical and affordable
  - Led to rapid expansion of drainage in the **1880s–1910s**

Drainage Districts still active today !

The Tiling Revolution

1888 Livingston County History Book by the Chapman Brothers

- Has beautiful illustrations of farmsteads
- Also has 2 great illustrations of Fairbury clay tile factories
- Straight tile factory was the location where Dos Fuentes restaurant is now located



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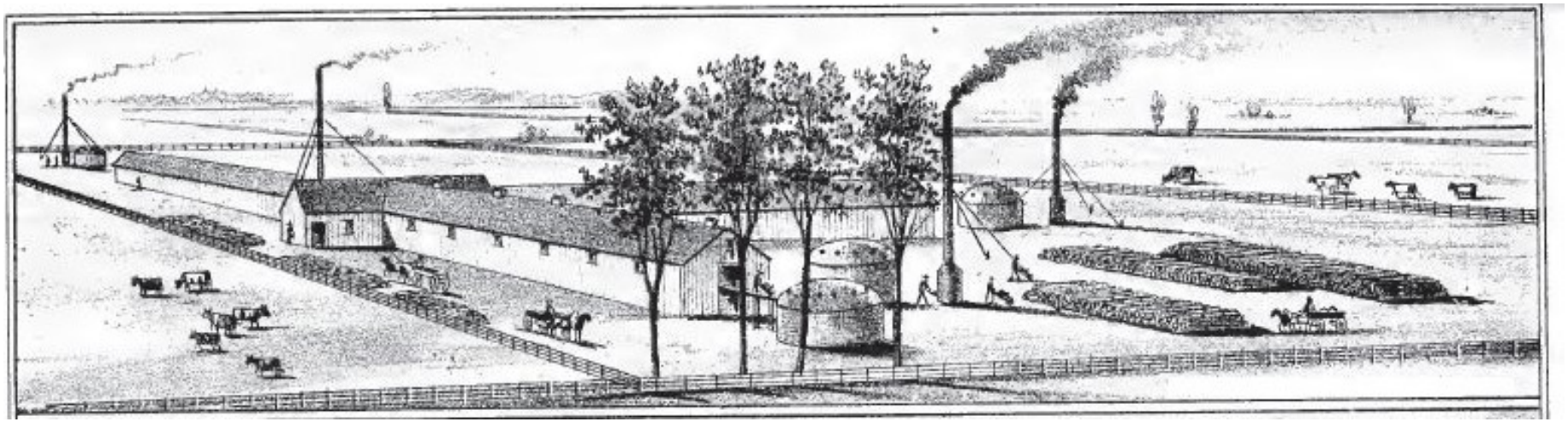
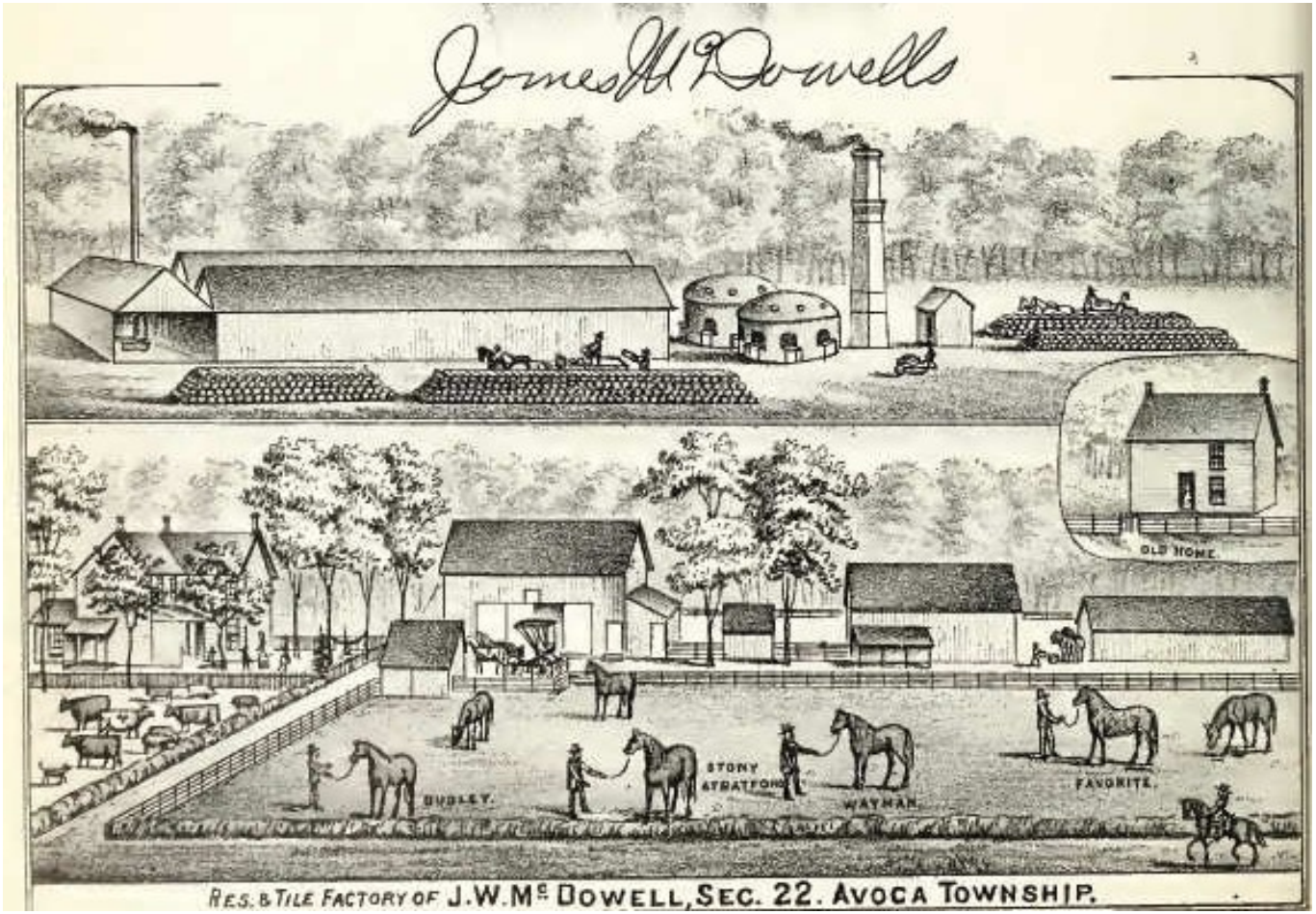


Straight Tile Factory on Route 24 Fairbury west side

NOTE: This is only tile factory mentioned in 1878 Livingston County history book, so could be 1st in Livingston County.

The Tiling Revolution



James McDowell tile factory north of Fairbury

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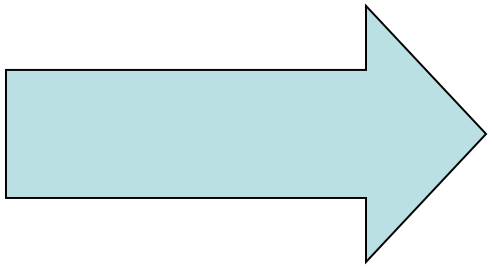
Did some early farmers remove their tile?

- Alma Lewis James – Fairbury Historian
- Stuffed Clubs & Antimacassars Fairbury history book



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Did some early farmers remove their tile?

- "This was at a time of general prosperity. In addition to the income from the coal mines, the soldiers returning from the Civil War were opening up new farms all around Fairbury.

- Most of the land was marshy, and so a new tile factory was started to help drain it.

- It was all experimental, and most of the farmers were exceedingly skeptical about going against nature in such a high-handed fashion, and so, **when the next drought beset them, some dug it all out again."**

Fact or Fiction?

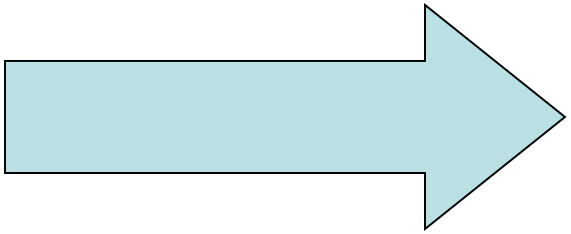
The Tiling Revolution

Drainage Ditches

- Most of the field tile in Livingston County goes to drainage ditches that empty the water into the Vermilion River

- Early ditches all dug by hand

- Unique 1940 Cropsey photo of machine digging the drainage ditch



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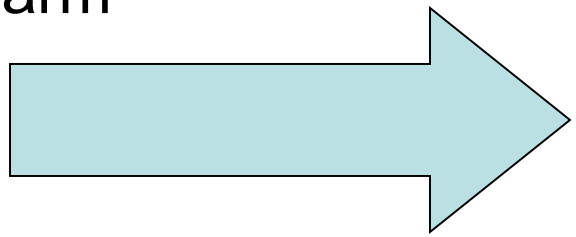
- Early ditches dug by hand.
- Digging Cropsey drainage ditch in 1940.
- The boat-like contraption moved forward as it scooped out earth and placed it on the outer edges of the ditch.

The Tiling Revolution

Did Some Livingston County farmers make their own tile?

- Bill Fugate says that “family lore” says his ancestors made their own clay tile northeast of Fairbury on Indian Creek
- They had clay available and timber to provide wood fires for the kiln
- Provided some samples from their farm



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Did Some Liv. County farmers make their own tile?

- Fugate's made their own brick and field tile

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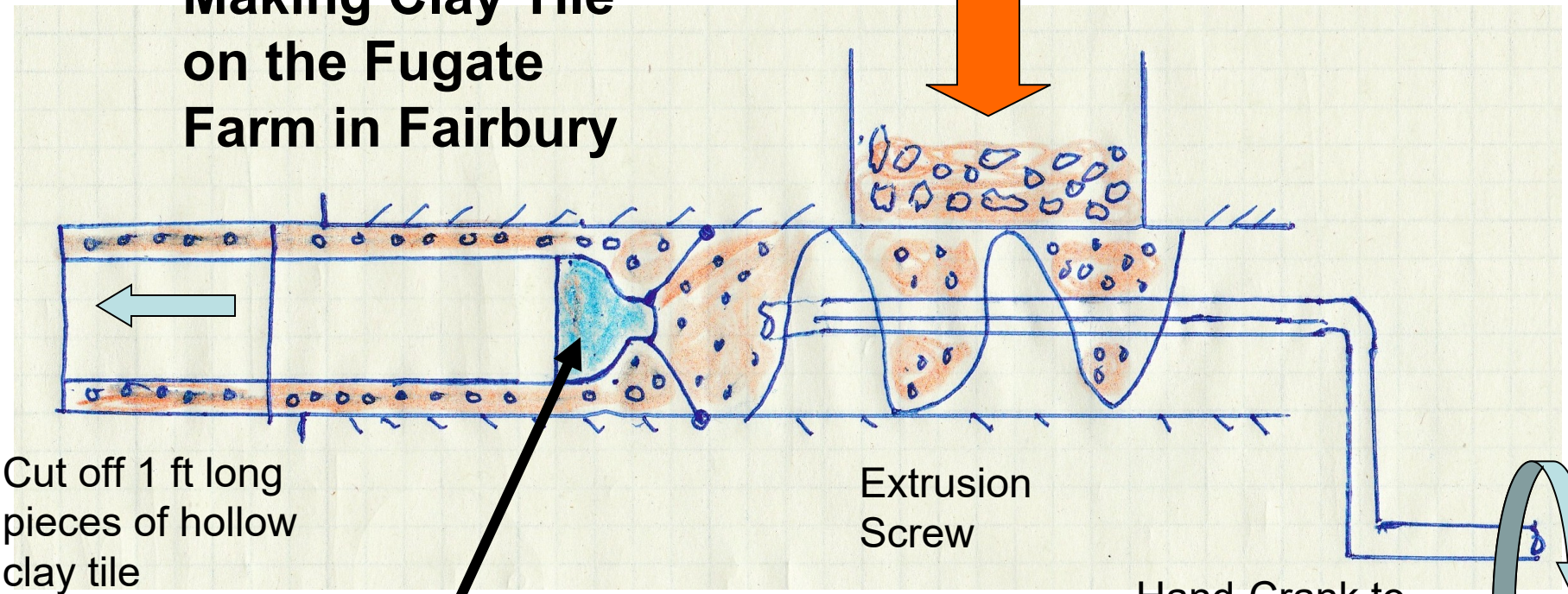
Making Clay Tile on the Fugate Farm in Fairbury


Clay dumped into screw hopper
Cut off 1 ft long pieces of hollow clay tile
Extrusion Screw
Hand-Crank to turn screw. Might need gearing to generate enough extrusion force
Extrusion cone to form hollow tube.
Held in place by 3 thin arms to outer diameter.

The Tiling Revolution

How Many Clay Tile to do an 80 Acre Farm?

- Tile lines spaced **100 feet apart**
- **80 acres** requires about **34,800 tiles**
- That equals roughly **6½ miles of clay tile**

In 1887 Bloomington's Weekly Pantagraph reported that over 28,756,403 feet of tile had been installed in McLean County — the equivalent of over 5,400 miles.

The Tiling Revolution

Tiling Impact on Land Prices

- Land values often went up by 10X in swampy areas !!
  - Reduced annual flooding and crop damage
  - Corn roots not damaged by high water tables
  - Corn yields higher and more consistent each year

The Tiling Revolution

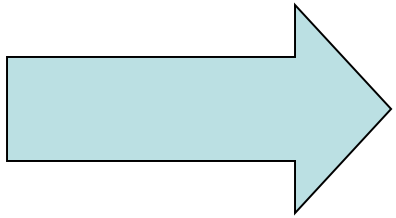
Tiling Impact on Francis Townsend's Father?

- Decided farming in the 1880s was too hard of life
- Sold Fairbury farm for 10X after it was tiled
- Moved Family to Nebraska
- He opened a hardware store in Nebraska
- Francis Townsend and brother went to seek their fortune in California working as cowboys and farm hands

The Tiling Revolution

Pantagraph Negatives Project

- Old Pantagraph negatives slowly being saved and digitized
- Posted on web site for free viewing and usage
- 90% + are beautiful photographs (some negatives cracked, but AI software can fix easily)
- 1948 Photos of Chatsworth Diller tile factory scenes
- Colorized some of them



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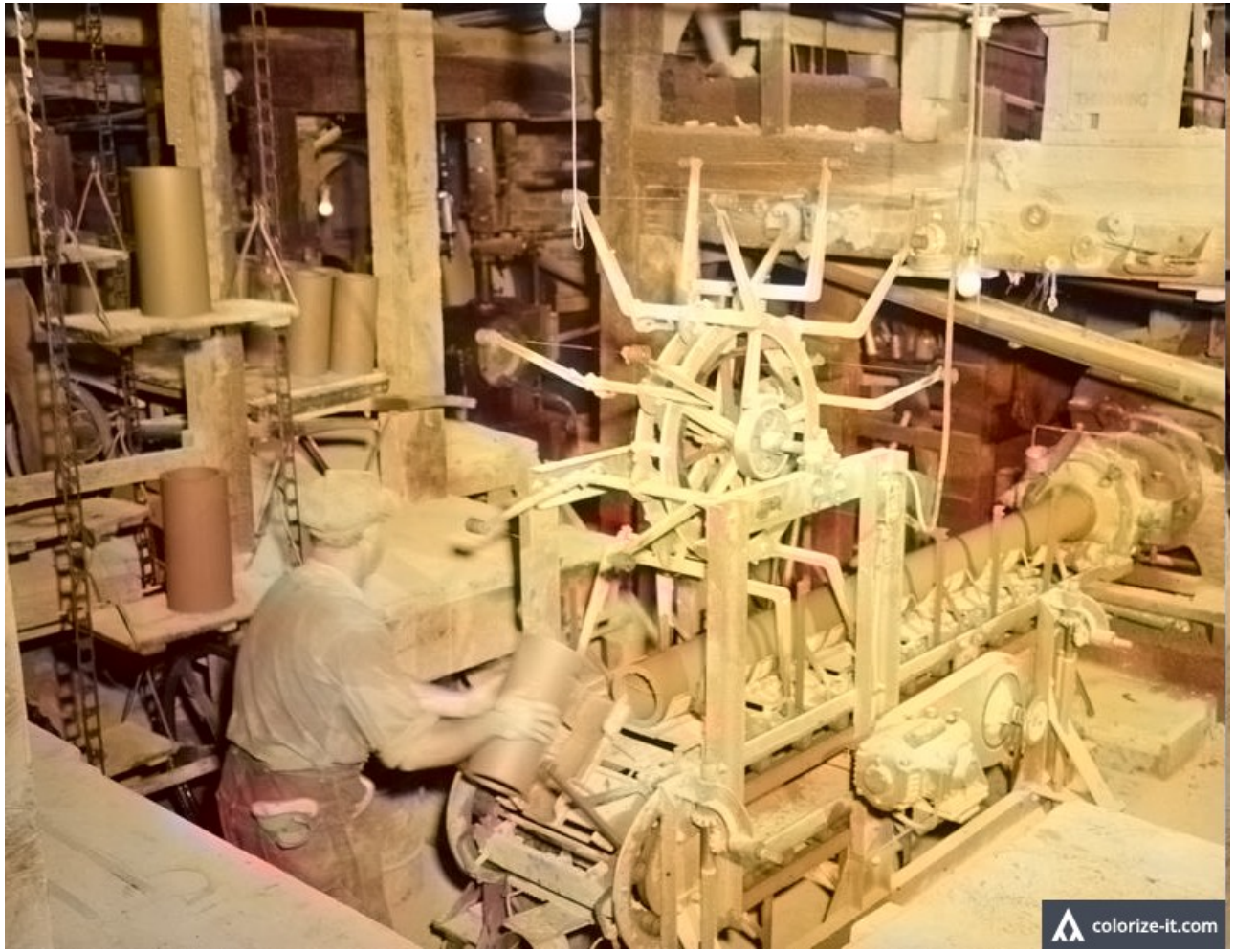

- Clay dug next door to factory
- Screw type extruder into hollow clay tubes
- Each piece cut to length
- Manually unloaded

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- Soft clay tile stacked in kilns manually

The Tiling Revolution

- Multiple kilns

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- Kiln door sealed for firing
- Remove the door after firing
- Manually unload tiles from kiln
- Ship tiles

The Tiling Revolution

- Ship out finished tile by truck or train

The Tiling Revolution

1870 to 1910 Clay Tile Peak

- Clay tile will last indefinitely
  - No need to periodically replace it
- Once most fields tiled, no need for many tile factories
- Most clay tile factories closed up after the boom over
- In modern times, more plastic tile added to existing clay tile drainage to improve crop yields

The Tiling Revolution

1980s Clay to Plastic tile

- Clay tile phased out for cheaper plastic tile
- Plastic tile still made at Diller Tile in Chatsworth
- Specialized machines install plastic tile in the fields

The Tiling Revolution

1830 to 1880

-Swamp
-Crops often flooded
-Annual bouts of Malaria
-Low corn crop yields
-Low land values

1880 to 2026

-No Malaria
-Much less flooding
-Among the most productive farm land on the Planet
-High land values

The Tiling Revolution

Questions?